

2008 Bunker Hill Superfund Site Coeur d'Alene Basin Blood Lead Levels

Idaho Department of Health and Welfare
Idaho Department of Environmental Quality
Panhandle Health District
United States Environmental Protection
Agency

Lead Health Intervention Program (LHIP)

Annual Blood Lead Surveys

- **Public health service offered by the State**
- **Not a study or experiment**
- **Box since 1974/1985**
- **Basin since 1996**

Panhandle Health District LHIP

LHIP is an Interim Health Response Activity

- To identify children with high blood lead
and assist families**

Superfund is a Risk-based Cleanup Action

- To prevent future exposures**

Annual Blood Lead Surveys and Cleanup Activities

- Remediation is **NOT** based on blood lead data.
- Remediation **IS** based on risk of exposure to environmental (soils and dust) metals concentrations.

Remediation reduces health risks to children and women of child-bearing age currently residing in the Basin and for future generations.

Panhandle Health District

LHIP Procedures

No cash incentive for participants that live:

- **within the **Box** and are between *6 months and 9 years of age*, or**

\$20.00 cash incentive for participants that live:

- **within the Coeur d'Alene River Basin and are between *6 months and 6 years of age***

- **Prior to blood draws, the parent/legal guardian or adult participant must sign a Consent Form and complete the appropriate Questionnaire**

Panhandle Health District LHIP Procedures

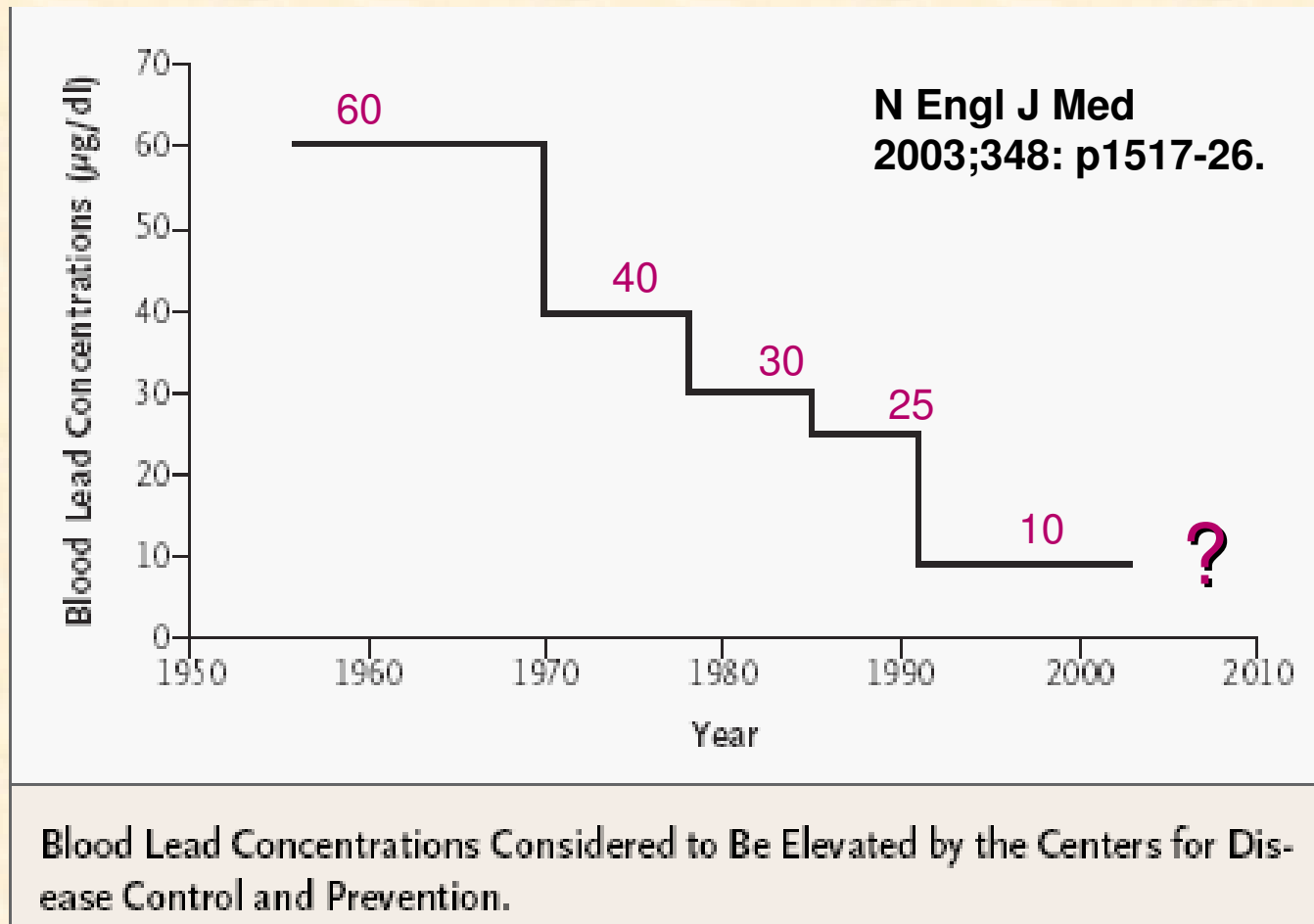
- **Screening blood test is done by skin puncture (capillary or fingerstick - FS)**
- **Blood samples are collected in a lead-free ESA capillary tube and analyzed immediately using the LeadCare Analyzer**
- **Results of capillary test are provided to the participant or parent immediately after analysis**

Panhandle Health District LHIP

One to two observations per child:

- Capillary (fingerstick - FS) for every participating child**
- Venous (ESA Laboratories) for every child with a FS level $\geq 8 \mu\text{g/dl}$**

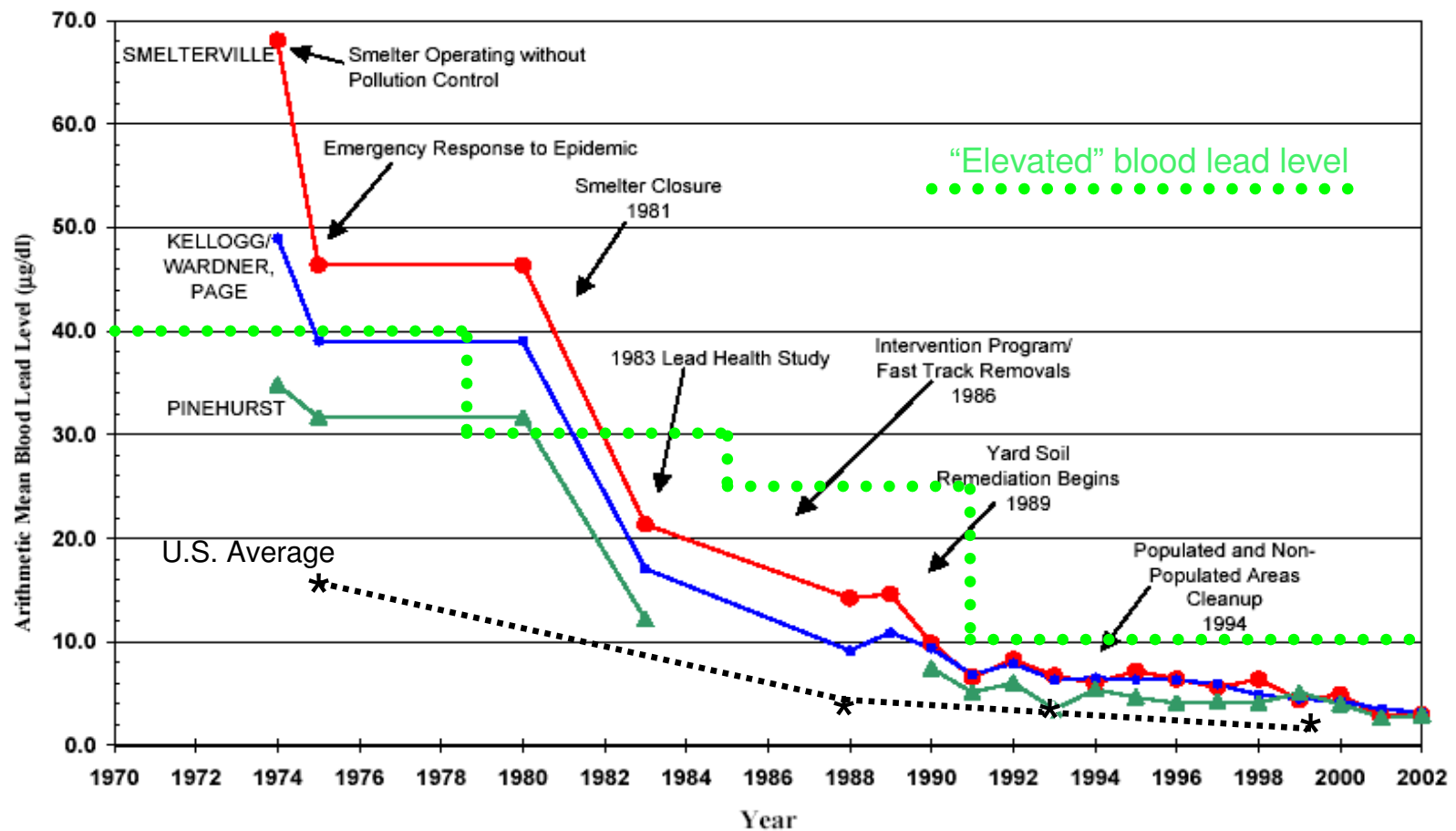
Decreasing “elevated” blood lead levels



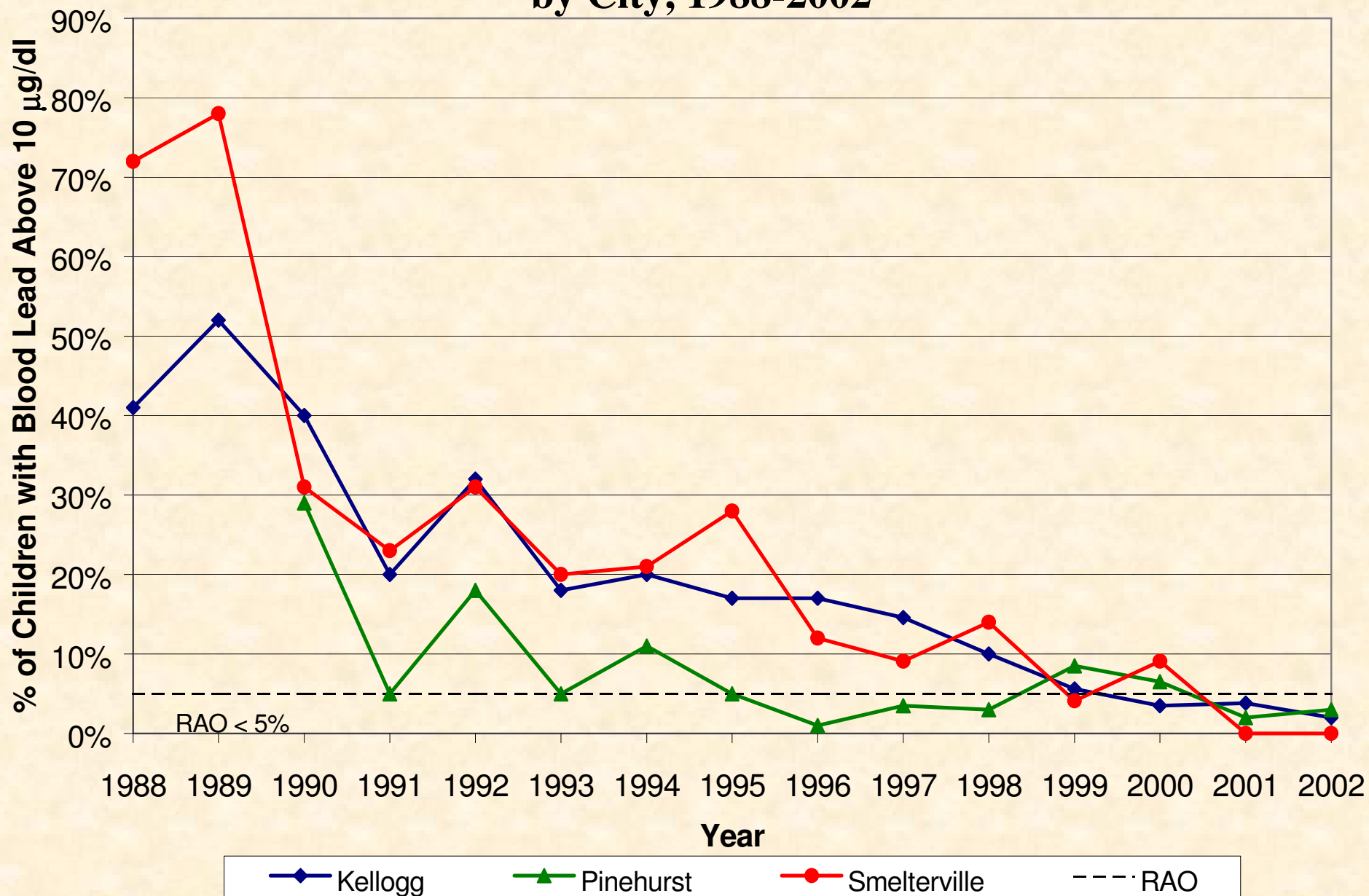
Bunker Hill Box

Average Blood Lead: 1974-2002

Children's Blood Lead Levels by Year, 1974-2002



Percent of Box Children with Blood Lead Levels ≥ 10 $\mu\text{g/dl}$, by City, 1988-2002



Box Lead Health Intervention

Summary Statistics 1988-1994

Year	Number of children in survey	Mean blood Pb (µg/dl)	Number of children with blood Pb (µg/dl)			Percent of children ≥ 10 µg/dl
			≥25	≥15	≥10	
1988*	230	9.9	7	35	105	46%
1989*	275	11.4	8	71	154	56%
1990	362	8.9	2	41	134	37%
1991	365	6.3	2	17	56	15%
1992	415	7.4	3	31	110	27%
1993	445	5.6	1	10	66	15%
1994	416	6.2	1	15	71	17%

*does not include Pinehurst

Box Lead Health Intervention Summary Statistics 1995-2002

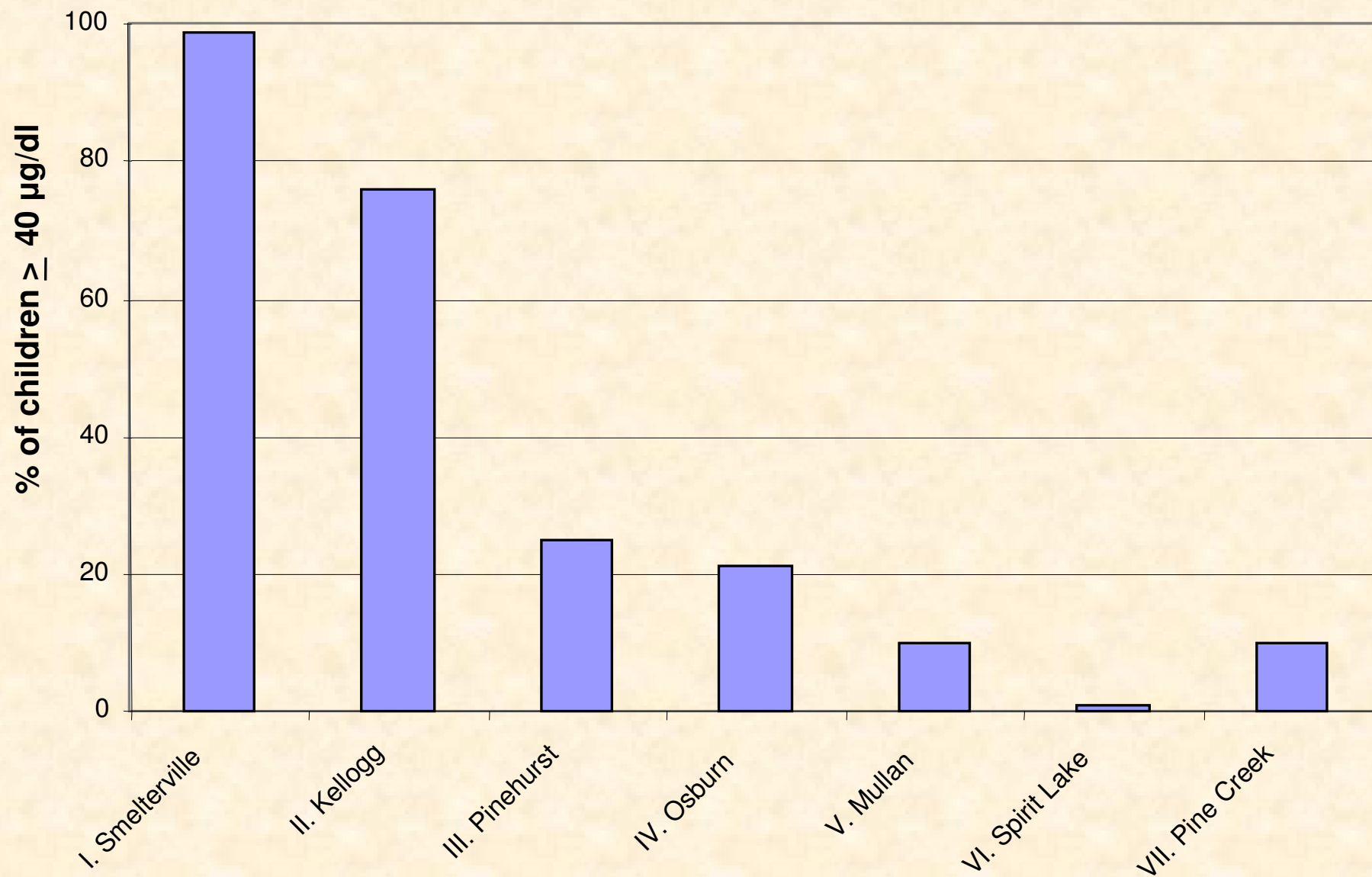
Year	Number of children in survey	Mean blood Pb ($\mu\text{g}/\text{dl}$)	Number of children with blood Pb ($\mu\text{g}/\text{dl}$)			Percent of children $\geq 10 \mu\text{g}/\text{dl}$
			≥ 25	≥ 15	≥ 10	
1995	405	6.0	2	20	62	15%
1996	397	5.8	2	13	49	12%
1997	337	5.4	0	6	36	11%
1998	375	4.8	0	5	31	8%
1999	370	4.7	0	3	23	6%
2000	320	4.3	0	5	17	5%
2001	322	3.2	0	4	10	3%
2002	368	3.1	0	3	7	2%

2008 Blood Lead Summary Statistics – Box (age 0-9)

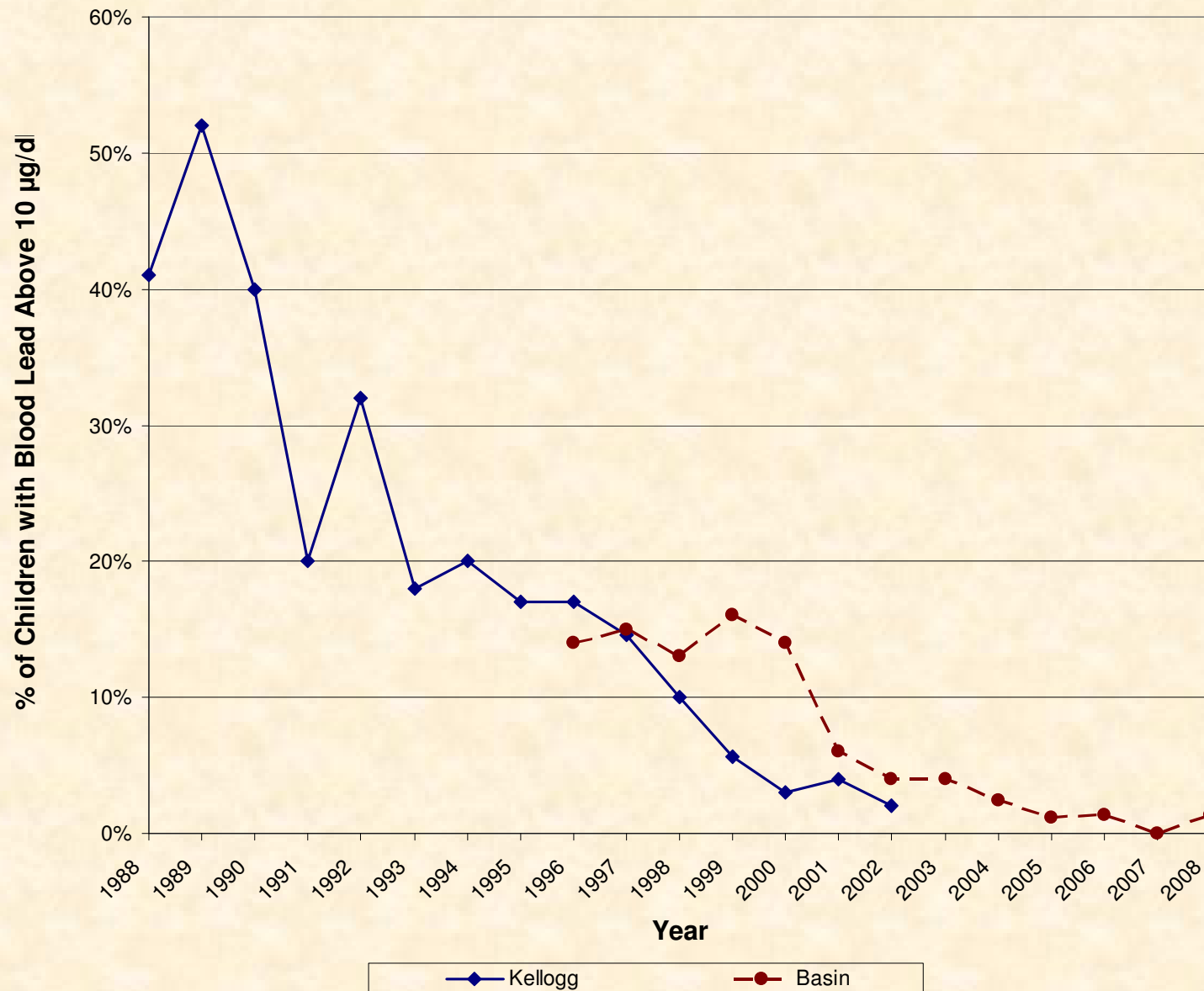
Total Number of Children (N)	18
Minimum (µg/dl)	1.4
Maximum (µg/dl)	9.6
Average (µg/dl)	2.8
Standard Deviation	2.1
Geometric Mean (µg/dl)	2.3
Geometric Standard Deviation	1.8

		Percentage
Total Number of Children (N)	18	
Number of Children ≥ 10 µg/dl	0	0%
Number of Children ≥ 15 µg/dl	0	0%
Number of Children ≥ 20 µg/dl	0	0%

Blood Lead Levels by Area, 1974



**Percent of Children with Blood Lead Levels ≥ 10 $\mu\text{g/dl}$,
Kellogg and Basin, 1988-2008**



2008 Blood Lead Summary Statistics – Basin (age 0-6)

Total Number of Children (N)	73
Minimum (µg/dl)	1.4
Maximum (µg/dl)	11.4
Average (µg/dl)	2.4
Standard Deviation	1.6
Geometric Mean (µg/dl)	2.1
Geometric Standard Deviation	1.6

		Percentage
Total Number of Children (N)	73	
Number of Children ≥ 10 µg/dl	1	1.4%
Number of Children ≥ 15 µg/dl	0	0%
Number of Children ≥ 20 µg/dl	0	0%

Basin Blood Lead Summary

by Year, 1996 - 2001 (age 0-6 only)

Year	1996	1997	1998	1999	2000	2001
N	58	13	70	162	102	117
N \geq 10 $\mu\text{g/dl}$	8	2	9	26	14	7
% \geq 10 $\mu\text{g/dl}$	14%	15%	13%	16%	14%	6%
N \geq 15 $\mu\text{g/dl}$	3	1	4	12	4	2
% \geq 15 $\mu\text{g/dl}$	5%	8%	6%	7%	4%	2%
N \geq 20 $\mu\text{g/dl}$	0	0	2	4	1	0
% \geq 20 $\mu\text{g/dl}$	0%	0%	3%	2%	1%	0%

Basin Blood Lead Summary

by Year, 2002 - 2008 (age 0-6 only)

Year	2002	2003	2004	2005	2006	2007	2008
N	103	75	82	81	69	71	73
N \geq 10 $\mu\text{g/dl}$	4	3	2	1	1	0	1
% \geq 10 $\mu\text{g/dl}$	4%	4%	2%	1%	1%	0%	1.4%
N \geq 15 $\mu\text{g/dl}$	0	2	1	0	0	0	0
% \geq 15 $\mu\text{g/dl}$	0%	3%	1%	0%	0%	0%	0%
N \geq 20 $\mu\text{g/dl}$	0	0	0	0	0	0	0
% \geq 20 $\mu\text{g/dl}$	0%	0%	0%	0%	0%	0%	0%

Basin Blood Lead Summary

by Year, 1996 - 2001 (age 0-6 only)

Year	1996	1997	1998	1999	2000	2001
N	58	13	70	162	102	117
Min (µg/dl)	1.0	2.0	2.0	1.0	1.0	1.4
Max (µg/dl)	18.0	19.0	21.0	29.0	27.0	16.0
Ave (µg/dl)	5.2	6.0	6.3	6.4	5.8	4.5
GeoMean (µg/dl)	4.2	4.9	5.4	5.2	4.8	3.7

Basin Blood Lead Summary

by Year, 2002 - 2008 (age 0-6 only)

Year	2002	2003	2004	2005	2006	2007	2008
N	103	75	82	81	69	71	73
Min (µg/dl)	1.4	1.0	1.4	1.4	1.4	1.4	1.4
Max (µg/dl)	13.0	17.1	16.7	12.0	10.0	8.6	11.4
Ave (µg/dl)	3.7	4.1	3.9	2.9	2.8	2.9	2.4
GeoMean (µg/dl)	3.2	3.4	3.4	2.3	2.4	2.6	1.6

2008 Basin Blood Lead Summary Statistics by Area

Area	Kingston	Lower Basin	Mullan	Osburn
N	23	8	5	14
Min (µg/dl)	1.4	1.4	1.4	1.4
Max (µg/dl)	4.7	4.9	2.2	11.4
Ave (µg/dl)	2.0	2.2	1.7	3.4
GeoMean (µg/dl)	1.9	2.0	1.7	2.6

1 sample from Burke/Ninemile is not shown to protect confidentiality

2008 Basin Blood Lead Summary

Statistics by Area

Area	Side Gulches	Silverton	Wallace
N	5	13	4
Min (µg/dl)	1.6	1.4	2.2
Max (µg/dl)	2.3	3.2	5.5
Ave (µg/dl)	1.98	2.2	3.9
GeoMean (µg/dl)	1.95	2.1	3.6

2008 Basin Blood Lead Summary

Statistics by Age (years)

Age	1	2	3	4	5	6
N	13	9	13	10	15	13
Min (µg/dl)	1.4	1.4	1.4	1.4	1.4	1.4
Max (µg/dl)	5.5	6.3	3.5	5.4	11.4	3
Ave (µg/dl)	2.5	2.4	2.0	2.7	2.98	1.8
GeoMean (µg/dl)	2.3	2.1	1.9	2.4	2.3	1.7